CITY OF NORTHAMPTON, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
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Memorandum

To: Mayor David Narkewicz

From: Jim Laurila, P.E., City Engineer
David Veleta, P.E., Senior Civil Engineer

Copy: Public Works Commission

Date: April 15, 2016

Re: Pavement Projects for FY 2017

Public Works has developed a plan to improve the condition of several City streets in this fiscal year (FY2017). This memorandum identifies the selected streets, the approximate budget and cost of improvements, and the current schedule for bidding and construction.

For FY17, the City anticipates utilizing approximately $2.12 million from state Chapter 90 funds and $500,000 in local capital improvements money for street pavement improvement projects. The types of improvements proposed and the streets where the work is planned are described below.

Generally, the DPW uses data and analysis provided through the Vanasse Hangen Brustlin, Inc. (VHB) Pavement Management Program as the primary guide for pavement management selection. In addition, DPW applies our field knowledge of roadway usage, current repair conditions, and consideration of recent and upcoming underground utility projects when developing a list of streets for pavement improvement.

CRACK SEALING

Crack sealing pavement is the process of cleaning out pavement cracks using compressed air and applying a heated, liquefied asphalt-fiber sealant followed by the hand application of boiler slag to prevent pickup of the sealant by vehicles. Crack sealing prolongs the service life of pavement for about 5 years reducing the amount of water entering into the pavement. The selection of streets to be crack sealed is intended to maintain newer roads in good condition for as long as possible. The streets to be crack sealed this year were determined by reviewing the pavement condition index (PCI) for City streets and developing an estimated list of streets that could be crack sealed within the $150,000 budget for this work. The list of streets follows:

Street Name	From Segment	To Segment	Length (ft)	PCI
AHWAGA AVENUE	WEST ST	BELMONT AVE	334	90
BIRCH HILL ROAD	RYAN RD	PIONEER KNOLLS	1169	90
ICE POND DRIVE	ROCKY HILL ROAD	CUL DE SAC LOOP	1127	90
LAUREL STREET	GROVE ST	BURTS PIT RD	1260	90
OLANDER DR	VILLAGE HILL RD	FORD XING	1106	90
PROSPECT STREET	TRUMBULL RD	PROSPECT ST	321	89
SOUTH PARK TERR	SOUTH ST (EAST)	SOUTH ST (WEST)	928	89
BELMONT AVENUE	GREEN ST	AHWAGA AV	588	88
COLES MEADOW ROAD	MARIAN ST +2150	MARIAN ST +2950	796	88
JACKSON STREET	PROSPECT ST	411' N OF BARRETT ST	2074	88
BRIDGE ROAD	NORTH MAIN ST	JUNIPER ST	635	87
COLES MEADOW ROAD	MARIAN ST +4500	MARIAN ST +5040	537	87
GRAVES AVENUE	MARKET ST	DEAD END	605	87
GROVE STREET	EARLE ST	ROUTE 66	2605	87
NORTH MAIN ST	HAYWARD RD	ROTARY	333	87
RIDGEWOOD TERR	PROSPECT ST	JACKSON ST	1343	87
TEXAS ROAD	EARLE ST	200' FROM EARLE ST	200	87
ARLINGTON STREET	MASSASOIT ST	FRANKLIN ST	1022	86
GREEN STREET	BELMONT AV	CUL DE SAC LOOP	556	86
PROSPECT AVENUE	PROSPECT ST	BRIDGE RD	2941	86
BEACON STREET	SOUTH MAIN ST	PINE ST	1684	85
CALVIN TERRACE	PROSPECT AVE	NORFOLK AVENUE	516	85
CHESTNUT STREET	HIGH ST	BRIDGE RD	2361	85
COLUMBUS AVENUE	SOUTH ST	DEAD END	1103	85
MURPHY TERR	PROSPECT ST	CUL DE SAC	674	85
OLD WILSON ROAD	200' S OF ROCKY HILL RD	FLORENCE ROAD	3789	85
ORCHARD STREET	BRIDGE ST	NORTH ST	1202	85
RIVERBANK ROAD	CUL DE SAC	RAINBOW ROAD/GRAVEL	3044	85
STONEWALL DRIVE	N KING ST	DEAD END	384	85
DRURY LANE	896' S OF LOUDVILLE RD	2151' S OF LOUDVILLE RD	1255	84
FRUIT STREET	OLD SOUTH ST	SMITH ST	1039	84
OLIVE STREET	SOUTH ST	FORT ST	1263	84
BURTS PIT ROAD	2766' W OF PRINCE ST	66' W OF CLEMENT ST	2080	83
REVELL AVENUE	SOUTH ST	DEAD END	805	82
STRAW AVENUE	LOCUST ST	DEAD END	1601	72
ELM STREET	MAIN & WEST STS	NORTH ELM ST	4830	70

Crack sealing Schedule: Bids for the crack sealing were opened on March 31, 2016. The low bid contractor was Crack-Sealing, Inc. of Raynham, MA, and the value of the contract is $150,000. It is expected that crack sealing work will begin in June 2016, after these City streets have been swept.

MILL AND OVERLAY

This process mechanically mills and removes the top 2-3 inch layer of pavement leaving curbing, catch basins and manholes in place. These structures are adjusted as needed to match the final pavement grade. A new top course of pavement is installed after a tack coat of bitumen is applied as a bonding agent with the base course. The expected repair life is typically 12-15 years. The mill and overlay locations are determined by reviewing the streets that fall within the top Benefit Value tier as calculated by the VHB software. The streets selected below are within that top tier.

Mill and Overlay Streets	Estimated Cost
1. Park Street: Pine Street to North Main Street & 130' on Meadow St.	$140,000
2. Locust Street: South Main Street to Berkshire Terrace	$ 75,000
3. Bridge Street: Market Street to 250' South of Pomeroy Terrace	$ 95,000
TOTAL	$310,000

Mill and Overlay Schedule: Bid specifications for the mill and overlay projects will be part of a Pavement Contract that is currently being prepared, and bidding is expected to occur in April or early May. The paving schedule for each street will be determined once a contract has been awarded.

COLD-IN-PLACE RECYCLING & OVERLAY

Cold-in-place recycling is a treatment train process where a milling machine mills up to a 4" depth of pavement and is connected to an asphalt paving machine that immediately recycles the milled asphalt with added bitumen and aggregate, laying down a rejuvenated pavement surface. The surface is somewhat open graded and requires a Hot Mixed Asphalt (HMA) overlay to complete the work. The expected repair life is typically 15-18 years. This process can be used on roads that require reclaiming and is a significantly less expensive treatment. However, its application is limited to roadways with few or no utility structures.

Cold-in-Place Recycling & Overlay Only Streets	Estimated Cost
1. Park Hill Road: Florence Road to 1,000' West of Greenleaf Drive	$250,000
2. Burts Pit Road: 1,146' to 2,766' West of Prince Street (Sunset Hill)	$ 90,000
TOTAL	$340,000

Cold-in-Place Recycling & Overlay Schedule: The cold-in-place recycling and overlay projects will be included in the Pavement Contract discussed above.

RECLAIM

A street that is reclaimed is mechanically ground, removing all existing layers of pavement. The material can be used to repair or supplement the road's gravel base as needed. Excess material is stockpiled for use by the DPW. The road base is graded and compacted before base and top courses of new pavement are installed. Structures are adjusted and may be rebuilt if required. The expected repair life is typically 18-22 years. DPW uses information from the VHB asset management to determine what streets are appropriate for reclaiming and we use the VHB benefit value as a guide to prioritizing street candidates for reclaiming. For this year, Audubon Road from Reservoir and River Roads is scheduled for reclaiming in conjunction with water line replacement in the roadway and to the Audubon Road tank, and drainage improvements, including a box culvert replacement near Leeds center.

Reclaim Streets	Estimated Cost
Audubon Road: Reservoir & River Road to 2,600' Westerly	$360,000
Kennedy Road to 600' Easterly	$ 60,000
TOTAL	$420,000

Reclaim Schedule: Design and permitting for the roadway, water line and culvert work is currently in process and bidding is expected to occur in May or early June. The water line, drainage and culvert work will precede the roadway reclaiming and repaving. It is anticipated that at least the base course of pavement will be installed by the end of the construction season.

FULL DEPTH RECONSTRUCTION

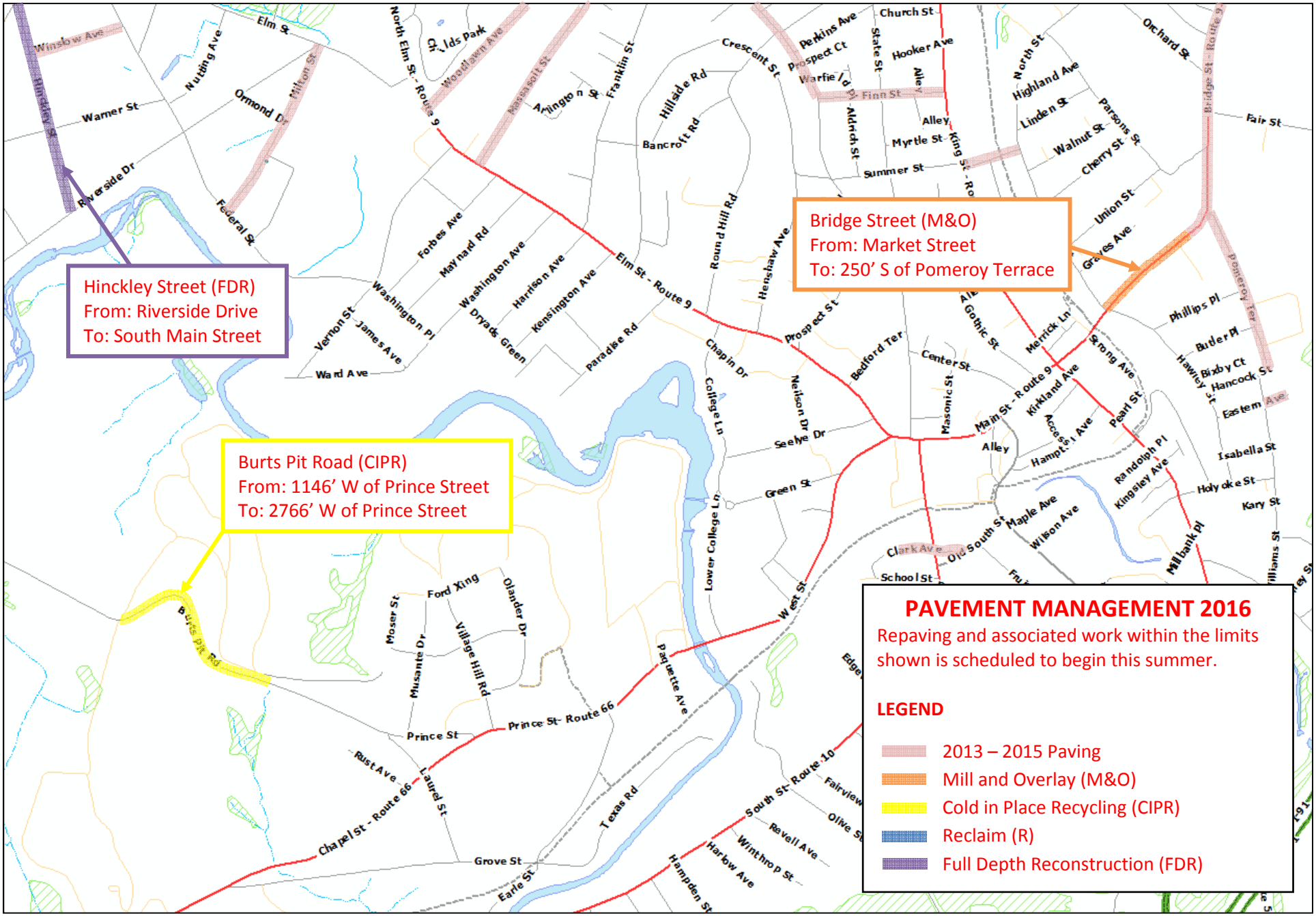
Full depth reconstruction entails removing all the existing pavement and 12-18 inches of base gravel material, depending on the local soil conditions. New gravel base material to meet current specifications is then installed, graded and compacted before base and top courses of new pavement are placed. This process is the most expensive roadway treatment and is typically undertaken only when underground utility replacement is also being done. The expected repair life is typically 22 or more years. For this year, Hinckley Street is scheduled for full depth reconstruction in conjunction with the replacement of water, sewer and drain lines, reconfiguration of drain lines that includes a new outfall, slope stabilization and access road off Riverside Drive, and replacement of existing and installation of new sidewalks.

Full Depth Reconstruction Streets	Estimated Cost
Hinckley Street: Riverside Drive to South Main Street	
Including Outfall slope stabilization and access	$1,400,000
TOTAL	$1,400,000

Full Depth Reconstruction Schedule: Design and permitting for the project is substantially complete except for details at the new drainage outfall and slope stabilization. Bidding is expected to occur in late May or early June. The underground utility replacement and outfall work will precede the roadway reconstruction and repaving. It is hoped that the base course of pavement will be installed by the end of the construction season.

BOX PAVING

Based on experience from FY15 projects, it has been determined that box paving by DPW crews is most efficient when employed on short sections of roadway that are in need of repair. DPW crews will select appropriate roadway sections to box pave in FY17 as scheduling allows.



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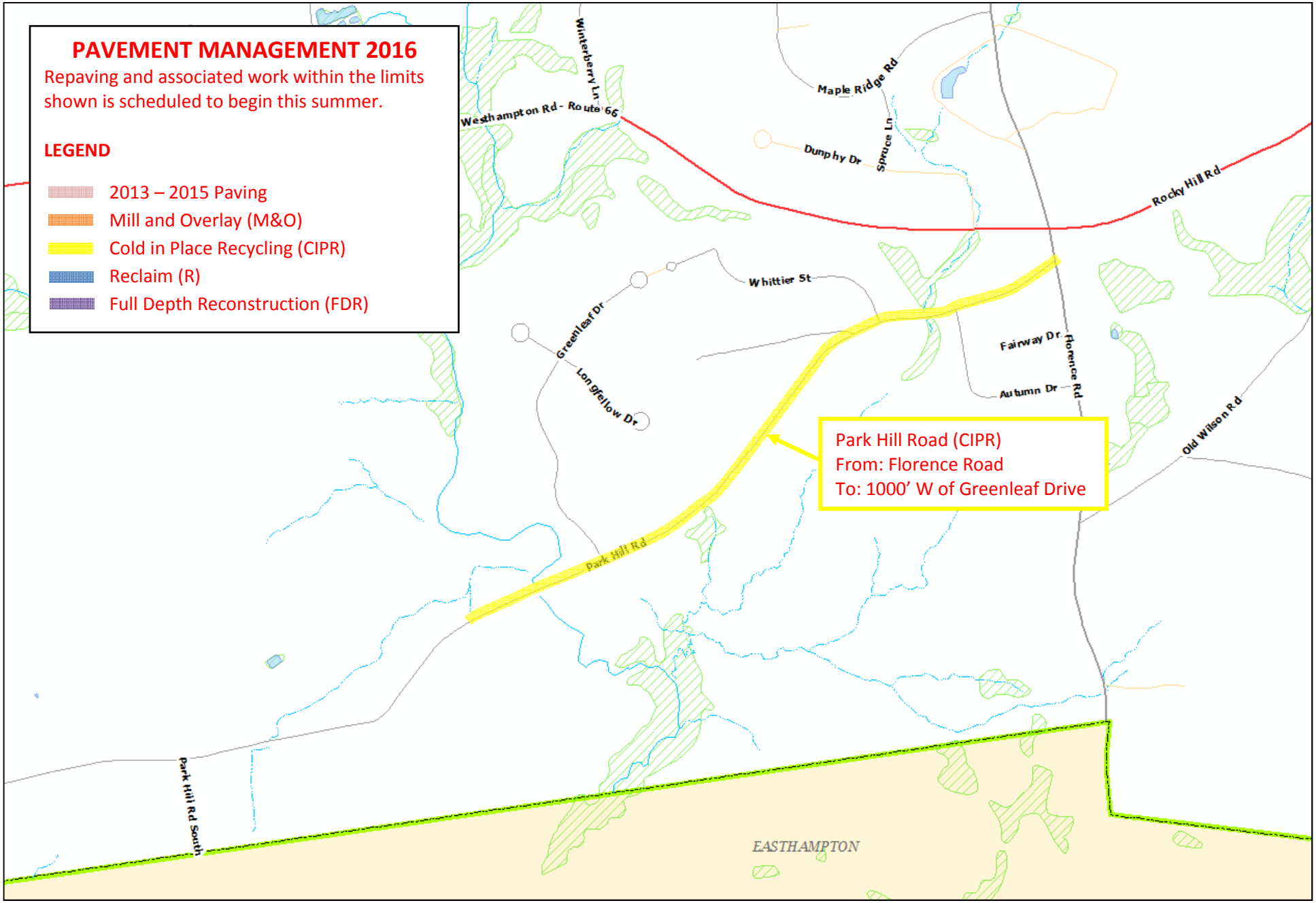

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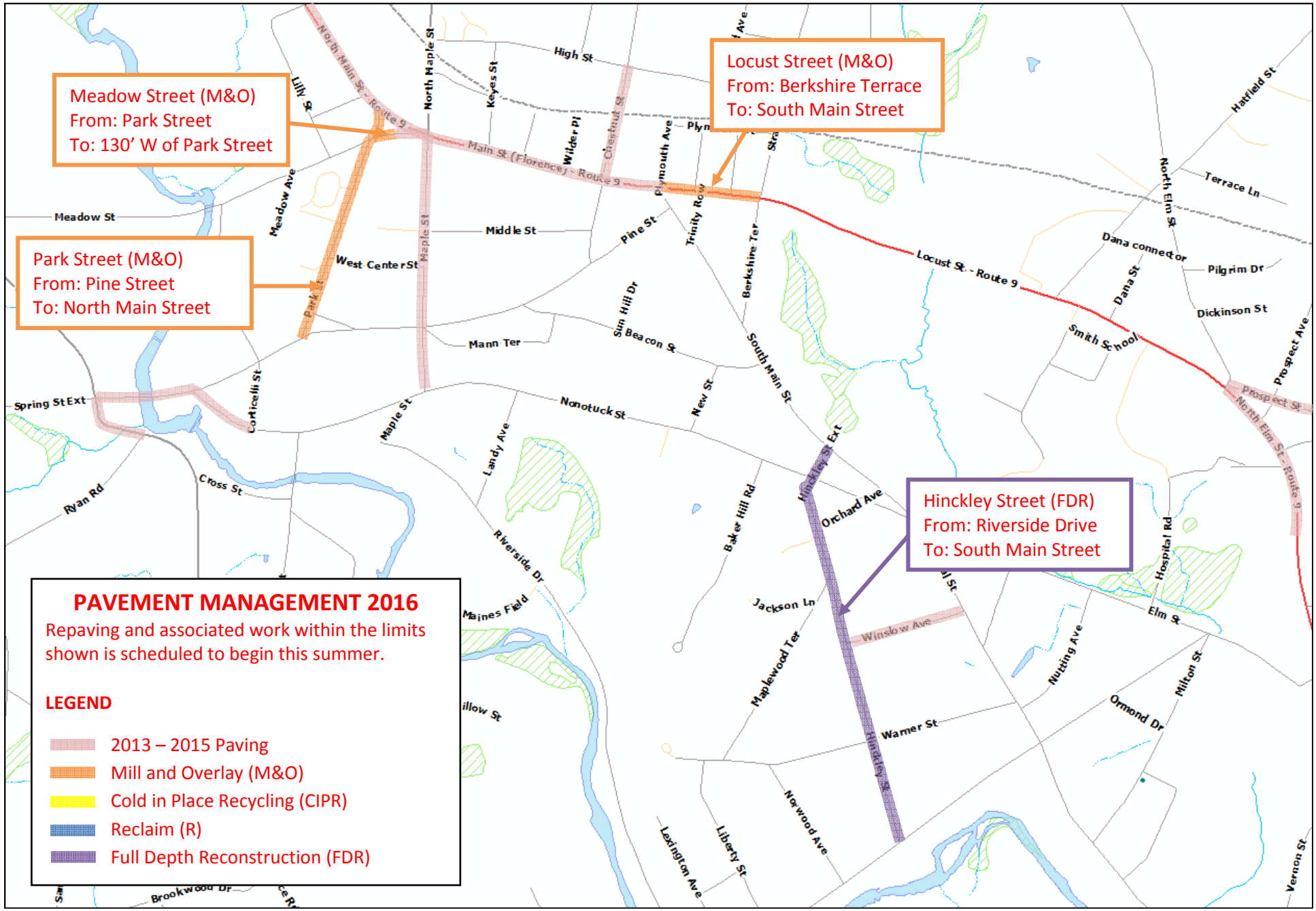

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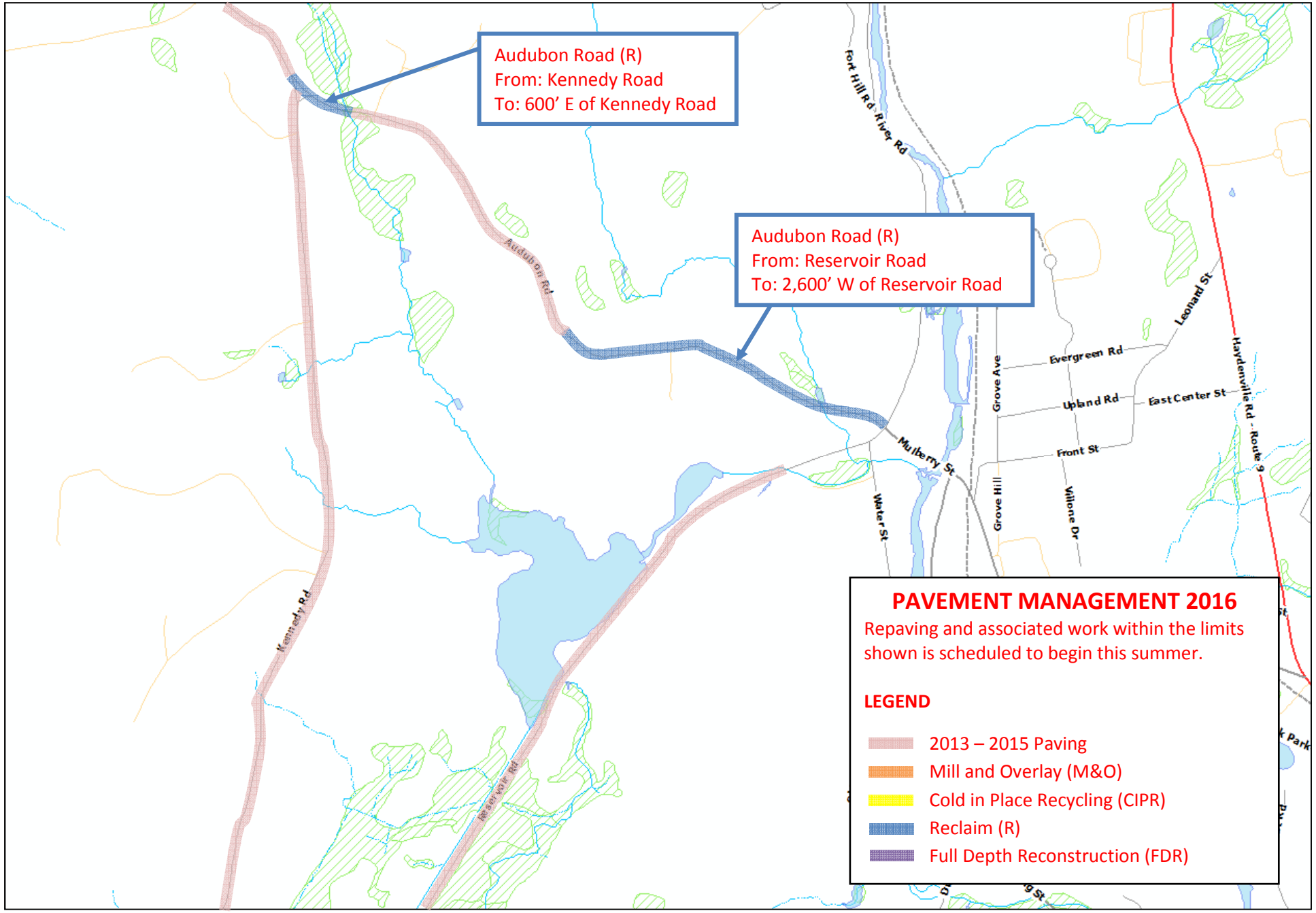

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